

I claim:

*Sub
A17* 1. Casement window operator apparatus comprising a plastic polymer housing having a plastic main body and a plastic cover, a plastic sliding tounge fitted between the cover and the main body for sliding laterally therein, an extension on the sliding tounge, a U-shaped opening in the extension for engaging a connector on a window-moving linkage, a plastic lever connected to the main body for pivoting therein and connected to the plastic sliding tounge for sliding the tounge in the plastic polymer housing as the lever is moved.

2. The apparatus of claim 1, wherein the sliding tounge further comprises a flat body and a relatively thick rim extending around the flat body.

3. The apparatus of claim 2, further comprising a relatively thinner rim extending around the U-shaped opening

4. The apparatus of claim 2, further comprising wings extending from the flat body and guide lugs extending from the wings.

5. The apparatus of claim 4, further comprising cylindrical guides extending from the flat body opposite from the lugs.

6. The apparatus of claim 2, further comprising an oval groove formed in the flat body and surrounded by an oval rim.

*Sub
A21* 7. The apparatus of claims 6, further comprising recesses extending laterally from an end of the oval groove remote from the U-shaped opening

8. The apparatus of claim 7, further comprising curved lugs in the recesses for holding the sliding tounge in extreme positions

9. The apparatus of claim 6, wherein the plastic lever has a generally flat shaped handle for

moving by a user and has a cylindrical bearing portion and an actuator arm extending radially from the cylindrical bearing portion opposite the handle and an actuating cylinder extending from a remote end of the actuator into the oval groove in the flat body.

10. The apparatus of claim 9, further comprising a recess in an outer surface of the cylindrical bearing and a plastic bearing ring inserted in the recess.

Sub a 3 11. The apparatus of claim 1, wherein the main body has inward extending reinforced tubular receivers, and wherein the cover has inward projecting pins for fitting in the receivers.

12. The apparatus of claim 11, wherein the pins have radially extending energy directors, wherein the main body has peripheral steps, and wherein the cover has peripheral energy directors, which fit in the peripheral steps for fusing the cover and the main body adjacent the energy directors upon application of ultrasonic energy.

Sub 47 13. The apparatus of claim 1, wherein the cover has an inward ledge, which provides a guide for the cylindrical extensions, and wherein the main body has parallel guides for the guide lugs.

Sub 47 14. The apparatus of claim 1, wherein the main body and the cover have semi cylindrical shaped mounts with energy directors on the mounts for fusing the semi cylindrical mounts together into cylindrical mounts upon application of ultrasonic energy.

15. Casement window operator apparatus comprising a plastic housing having a plastic main body and a plastic cover, the plastic main body having a central integrally formed cylindrical bearing opening, an operating lever having a movable handle extending outside of the main body, the operating lever having a central cylindrical bearing extending through the cylindrical bearing opening and having an actuator arm radially extending from the cylindrical bearing and having an actuating cylinder at a remote end of the actuator arm, a plastic polymer housing having a plastic

main body and a plastic cover, a plastic sliding tounge fitted between the cover and the main body for sliding laterally therein, an extension on the sliding tounge, a U-shaped opening in the extension for engaging a connector on a window-moving linkage, a plastic lever connected to the main body for pivoting therein and connected to the plastic sliding tounge for sliding the tounge in the plastic polymer housing as the lever is moved, the sliding tounge further comprises a flat body and a relatively thick rim extending around the flat body and a relatively thinner rim extending around the U-shaped opening, wings extending from the flat body and guide lugs extending from the wings, cylindrical guides extending from the flat body opposite from the lugs, an oval groove formed in the flat body and surrounded by an oval rim and receiving the actuating cylinder for sliding the plastic tounge in the body as the plastic handle is moved.

16. The apparatus of claim 15, further comprising recesses extending laterally from an end of the oval groove remote from the U-shaped opening and curved lugs in the recesses for holding the sliding tounge in extreme positions.

17 The apparatus of claim 15, further comprising complementary inward extending reinforced tubular receivers, and inward projecting pins for fitting in the receivers on the main body and cover, and wherein the pins have radially extending energy directors, wherein the main body and the cover have peripheral steps and complementary peripheral energy directors, which fit in the peripheral steps for fusing the cover and the main body adjacent the energy directors upon application of ultrasonic energy.

18. The apparatus of claim 15, further comprising an inward ledge, which provides a guide for the cylindrical extensions, and parallel inward extending guides for the guide lugs on the cover and main body.

19. The apparatus of claim 15, wherein the main body and the cover have semi cylindrical shaped mounts with energy directors on the mounts for fusing the semi cylindrical mounts together into cylindrical mounts upon application of ultrasonic energy.

2025-07-24 09:09:00